

NAVIGATION.

Stage of Water in Rivers.—In the table on the right hand side of chart No. III are given the highest and lowest stages of water, as observed at Signal Service stations during the month of August, 1881. Throughout the country the rivers have been extremely low during the month. In no instance have they reached the danger line, or within six feet of it. The position of highest water with respect to the danger point in the various rivers is shown as follows: Figures indicate the depression of highest water in feet and inches below the danger line. Red river, 28 ft.; Missouri, 7 ft. 5 in. to 14 ft. 4 in.; Mississippi, 6 ft. 5 in. to 27 ft. 10 in.; Ohio, 18 ft. to 40 ft. 7 in.; Cumberland, 39 ft. 4 in.; Tennessee, 27 ft. 8 in.; Monongahela, 26 ft. 4 in. to 27 ft.

Floods.—Mobile, 2d, very heavy rains, continuing up to night of the 5th; streets and houses flooded, causing considerable damage; the counties of Baldwin and Conecuh, across Mobile bay to the eastward, were almost completely inundated; travel on the Louisville and Nashville R. R. seriously impeded by heavy washouts; along some portions of the track water so deep that the work of repairing could not be prosecuted; several small vessels wrecked on the bay. Pensacola, Fla., 2d, remarkably heavy rains; 15.80 inches fell from the morning of the 2d to the morning of the 5th; Pensacola R. R. badly washed in several places; all communication closed; in the west Florida counties the country is inundated for miles; several vessels wrecked along the Gulf coast. Corpus Christi, Tex., 31st, unusually heavy rain; streets and basements flooded; considerable damage to property. Visalia, Cal., 8th, heavy rains in mountains, flooding all the neighboring streams. Silver City, N. M., 7th, very heavy rain; streets flooded; 15th, flood from mountain streams doing considerable damage; 20th, streets flooded. Phoenix, Ariz., 17th, very destructive in Salt River valley; loss to seeded grain estimated at \$60,000; mail and all other communication interrupted. Laredo, Tex., 19th heavy rains; river flooded; property removed to safer places. Colorado.—Denver, 20th, the extensive and heavy rains of the past few days caused great loss to property in the central portion of the state; the railroad companies suffered the greatest damage, nearly every road in the state experiencing heavy washouts or the loss of bridges; some of the washouts extended for a continuous length of five miles. Montgomery, Ala., 3d, several heavy washouts on the Louisville and Nashville R. R.; no trains arrived from New Orleans for 36 hours; the heavy and continuous rains of the week caused serious damage to crops, particularly cotton. Dunlap, Tenn., 15th, very heavy rains throughout Sequachie Co.; bridges destroyed and fields badly washed.

Waterspouts.—Smithville, N. C., 14th, about 4 feet in diameter, moved over Oak Island from SW. to NE. Port Eads, 14th, two waterspouts formed under a cumulo-stratus cloud, which at the time was moving southward over the Gulf.

Cloud Burst.—Central City, Gilpin Co., Colorado, 8th, about 4 p. m., a dark, heavy storm cloud approached from the west, accompanied by incessant thunder and lightning and a most terrible roar. The noise increased in intensity as the cloud drew nearer, when suddenly a large volume of water, 4 to 6 feet deep, came rushing down Eureka and Nevada streets, carrying everything before it. Heavy teams standing in the streets were overturned and carried down with the rushing current, and boulders weighing over 600 pounds were rolled along like pebbles. The whole length of the valley, from Nevadaville to Eureka, presented a terrible scene of desolation. Roadways in many places were cut to a depth of six feet, and for a length of several hundred yards. At points between Central City and Blackhawk the *debris* was piled to a height of 25 feet. For long distances sand was gathered in heaps from 4 to six feet deep. Many houses were washed away and stores flooded; in the latter several feet of sand and mud was deposited. Loss in general estimated at \$60,000. At Idaho Springs the storm was the severest ever experienced; several houses were carried away in Virginia canon; many railroad and county bridges between the forks of the creek and the town were swept away; nearly all the houses in the business part of the town were flooded, and the stores badly damaged by water and mud; estimated damage in town, \$20,000; the damage to the railroad between Idaho Springs and Floyd Hill was so great that it required the labor of 100 men 48 hours to complete repairs. Salt Lake City, 14th, 60 miles south of station on American Fork canon; houses, goods and trees were carried away. Wickenburg, Ariz., 6th, north of station on the Passayampa river; at sunset the bed of this stream was perfectly dry, but before 11 p. m. water was running over a width of nearly a mile, from 2 to 15 feet deep, and with a current estimated at 10 miles per hour; several teams were wrecked, and the loss of freight was estimated at from \$7,000 to \$10,000; 7th, at noon, the river was again dry.

High Tides.—Mobile, 3d, causing serious damage. Smithville, 21st, bath-houses swept away; wind blew at the rate of 84 miles per hour for about five minutes; considerable damage to the engineers' works on Smith's Island. Key West, 16th; Portsmouth, N. C., 25th, 26th; Charleston, 27th.

TEMPERATURE OF WATER.

The temperature of water, as observed in rivers and harbors at signal service stations, with the average depth at which observations were taken, is given in the table on the left hand side of chart No. III. Owing to sickness of observer, observations wanting at Punta Rassa on the 14th.

ATMOSPHERIC ELECTRICITY.

Thunder Storms.—In the various districts they were reported on the following dates: New England, 1st, 2d, 4th to 7th, 9th, 12th, 13th, 19th, 21st, 27th; Middle Atlantic states, 1st, 2d, 6th to 8th, 10th, 12th, 13th, 15th, 21st, 22d; South Atlantic states, 2d, 3d, 6th to 11th, 13th to 15th, 20th to 22d, 30th; Florida peninsula, 1st, 2d, 4th to 10th, 14th, 19th, 22d, 23d to 25th, 29th; Eastern Gulf states, 2d to 7th, 10th to 15th, 20th to 25th, 30th; Western Gulf states, 5th to 7th, 9th, 11th, 12th, 14th to 16th, 20th to 23d, 25th, 27th, 30th, 31st; Ohio valley and Tennessee, 4th to 9th, 11th to 14th, 18th to 21st, 23d to 26th, 29th to 31st; Lower Lake region, 1st, 2d, 6th, 7th, 9th, 10th, 12th, 31st; Upper Lake region, 2d to 6th, 9th, 11th, 12th, 16th, 19th, 25th, 26th, 31st; extreme Northwest, 1st, 4th, 8th, 10th, 16th, 21st, 22d, 26th, 28th, 29th; Upper Mississippi valley, 2d to 6th, 11th to 13th, 16th to 18th, 20th, 23d to 26th, 29th to 31st; Lower Missouri valley, 1st, 2d, 5th to 7th, 9th, 12th, 15th to 19th, 21st to 31st; Northern Slope, 2d, 4th, 7th to 14th, 16th, 19th, 21st, 25th to 31st; Middle Slope, 1st to 7th, 9th, 14th, 19th, 21st to 31st; Southern Slope, 1st to 6th, 8th, 12th, 13th, 14th, 16th, 18th, 20th, 21st to 23d, 28th to 30th, 31st; Rio Grande valley, 1st, 2d, 6th, 7th, 9th, 12th, 13th to 15th, 19th, 20th, 22d, 23d, 30th, 31st; Southern Plateau, 1st to 20th, 22d to 25th, 27th, 28th; Middle Plateau, 4th, 6th, 7th, 9th to 11th, 14th, 16th, 18th; Northern Plateau, 4th, 7th, 13th, 14th, 16th, 18th, 20th, 21st, 24th, 26th, 28th, 29th; North Pacific coast region, 13th, 26th, 30th; South Pacific coast region, 5th to 11th.

Atmospheric Electricity Interfering with Telegraphic Communication.—Ft. Missoula, Mont., 18th; Umatilla, 7th; Prescott, 7th; Pike's Peak, 21st, lightning arrester and grounding badly damaged; Jacksboro, Tex., 28th; Stockton, Tex., 22d, 23d; Ft. Sill, 1st, 4th, 5th, 6th, 18th, 28th, 30th; Ft. Bennett, 29th; Mason and Fredericksburg, Tex., 23d.

Auroras.—There were no consecutive displays reported between New England and the Northwest during the month. At isolated stations the following observations were reported: Eastport, 24th, 10.30 p. m.; Gardiner, Me., 20th, 9 p. m.; Newport, Vt., 24th; Strafford, Vt., 8th, 9 p. m.; Embarrass, Wis., 20th, 11 p. m.; Duluth, 13th, 11 p. m.; 24th, 9.30 p. m.; Clinton, Ia., 7th, 1.30 a. m.; Clear Creek, Neb., 19th, 24th, 25th, very faint; St. Vincent, 5th, 9.30 p. m., single arch; 12th, 10 p. m., bright arch, altitude 10°, dark segment; 18th, 10 p. m., faint diffuse light; 20th, 10 p. m., a few long streamers, faint, and of short duration; 23d, from 8.30 to 9.40 p. m.; 24th, 9.40 p. m., faint; 26th, 8.30 p. m., bright, without streamers. Bismarck, 20th, 8.30 p. m., faint streamers; Ft. Stevenson, Dak., 20th; Ft. Keogh, Mont., 19th, 11.30 p. m., diffuse light; Springfield, Mass., 20th, 11 p. m., beautiful display, lasting nearly half an hour.

Zodiacal Light.—Mobile, 15th; Nashville, 1st, 14th, 16th, 17th, 22d, 24th, 25th, 26th, 27th; Monticello, Ia., 21st, 22d.

OPTICAL PHENOMENA.

Lunar halos have been observed in the various districts on the following dates: New England, 8th, 10th, 12th, 14th; Middle Atlantic states, 8th, 11th, 12th, 31st; South Atlantic states, 3d, 8th, 11th, 12th, 13th, 26th; Florida peninsula, 2d, 3d, 5th, 10th; Eastern Gulf states, 1st, 2d, 4th, 6th, 9th; Western Gulf states, Indianola, 10th, 11th; Ohio valley and Tennessee, 5th, 8th, 9th, 10th, 11th, 14th; Lower Lake region, Sandusky, 8th, 11th; Upper Mississippi valley, La Crosse, 12th; extreme Northwest, Moorehead, 28th; Middle Slope, 2d, 10th; Southern Plateau, 1st, 3d, 5th; Middle Plateau, Salt Lake City, 8th; California, Poway, 5th.

Solar halos have been observed in the various districts on the following dates: New England, 1st, 7th, 26th, 28th; Middle Atlantic states, 1st, 8th, 12th, 13th, 26th; South Atlantic states, 2d, 16th; Florida Peninsula, 9th, 15th; Eastern Gulf states, 14th, 18th; Ohio valley and Tennessee, 1st, 3d, 8th, 10th, 19th, 24th, 27th; Lower Lake region, 8th, 24th, 26th; Upper Lake region, Alpena, 25th; Upper Mississippi valley, 9th, 10th, 11th, 12th, 13th, 16th, 17th,